

## WHAT IS CLAIMED IS:

1. An isolated or purified antiviral protein consisting essentially of the amino acid sequence of SEQ ID NO: 1, an amino acid sequence that is about 90% or more identical to SEQ ID NO: 1, an amino acid sequence that is about 90% or more homologous to SEQ ID NO: 1, or an antiviral fragment of any of the foregoing.
2. The isolated or purified antiviral protein of claim 1, which has been isolated or purified from *Scytonema varium*.
3. A variant of an isolated or purified antiviral protein of claim 1 or 2, wherein said variant comprises (i) one or more conservative or neutral amino acid substitutions and/or (ii) 1, 2 or 3 amino acid additions at the N-terminus and/or C-terminus, with the proviso that the variant has antiviral activity characteristic of the antiviral protein, which consists essentially of the amino acid sequence of SEQ ID NO: 1 and which is isolated or purified from *Scytonema varium*, to a greater or lesser extent but not negated.
4. A fusion protein comprising the isolated or purified antiviral protein of claim 1 or 2.
5. The fusion protein of claim 4, which comprises albumin.
6. A fusion protein comprising the variant of claim 3.
7. The fusion protein of claim 6, which comprises albumin.
8. A conjugate comprising the isolated or purified antiviral protein of claim 1 or 2 and at least one effector component.
9. The conjugate of claim 8, wherein the at least one effector component can be the same or different and is selected from the group consisting of polyethylene glycol, dextran, a toxin, an immunological reagent, an antiviral agent, and a solid support matrix.
10. A conjugate comprising the variant of claim 3.

11. The conjugate of claim 10, wherein the at least one effector component can be the same or different and is selected from the group consisting of polyethylene glycol, albumin, dextran, a toxin, an immunological reagent, an antiviral agent, and a solid support matrix.

12. A composition comprising (i) at least one of the isolated or purified antiviral protein of claim 1 or 2, a fusion protein thereof, and a conjugate thereof and (ii) a carrier, excipient or adjuvant therefor.

13. The composition of claim 13, wherein (i) is present in an antiviral effective amount and the composition is pharmaceutically acceptable.

14. A composition comprising (i) at least one of the variant of claim 3, a fusion protein thereof, and a conjugate thereof and (ii) a carrier, excipient or adjuvant therefor.

15. The composition of claim 14, wherein (i) is present in an antiviral effective amount and the composition is pharmaceutically acceptable.

16. An isolated or purified nucleic acid consisting essentially of a nucleotide sequence encoding the amino acid sequence of SEQ ID NO: 1, an amino acid sequence that is about 90% or more identical to SEQ ID NO: 1, an amino acid sequence that is about 90% or more homologous to SEQ ID NO: 1, or an antiviral fragment of any of the foregoing, optionally in the form of a vector.

17. The isolated or purified nucleic acid of claim 16, wherein the nucleic acid is isolated or purified from *Scytonema varium*.

18. A variant of the isolated or purified nucleic acid of claim 16 or 17, wherein the variant comprises nucleotides encoding (i) one or more conservative or neutral amino acid substitutions and/or (ii) up to 1, 2 or 3 amino acid additions at the N-terminus and/or C-terminus, with the proviso that the encoded amino acid sequence has antiviral activity characteristic of the antiviral protein, which consists essentially of the amino acid sequence of SEQ ID NO: 1 and which is isolated or purified from *Scytonema varium*, to a greater or lesser extent but not negated, optionally in the form of a vector.

19. An isolated or purified nucleic acid consisting essentially of a nucleotide sequence encoding the fusion protein of claim 4, optionally in the form of a vector.
20. An isolated or purified nucleic acid consisting essentially of a nucleotide sequence encoding the fusion protein of claim 6, optionally in the form of a vector.
21. An isolated cell comprising the isolated or purified nucleic acid of claim 16 or 17.
22. The isolated cell of claim 21, which is a bacterium or a yeast.
23. The isolated cell of claim 22, wherein the bacterium is lactobacillus.
24. An isolated cell comprising the variant of claim 18.
25. The isolated cell of claim 24, which is a bacterium or a yeast.
26. The isolated cell of claim 25, wherein the bacterium is a lactobacillus.
27. An isolated cell comprising the isolated or purified nucleic acid of claim 19.
28. The isolated cell of claim 27, which is a bacterium or a yeast.
29. The isolated cell of claim 28, wherein the bacterium is a lactobacillus.
30. An isolated cell comprising the isolated or purified nucleic acid of claim 20.
31. The isolated cell of claim 30, which is a bacterium or a yeast.
32. The isolated cell of claim 31, wherein the bacterium is a lactobacillus.
33. A composition comprising (i) the isolated or purified nucleic acid of claim 16 or 17, optionally as part of an encoded fusion protein, and (ii) a carrier, excipient or adjuvant therefor.

34. The composition of claim 33, wherein (i) is present in an antiviral effective amount and the composition is pharmaceutically acceptable.

35. A composition comprising (i) the variant of claim 18, optionally as part of an encoded fusion protein, and (ii) a carrier, excipient or adjuvant therefor.

36. The composition of claim 35, wherein (i) is present in an antiviral effective amount and the composition is pharmaceutically acceptable.

37. A method of inhibiting a viral infection of a host, which method comprises administering a viral infection-inhibiting amount of at least one of the following:

(i) an isolated or purified antiviral protein consisting essentially of the amino acid sequence of SEQ ID NO: 1, an amino acid sequence that is about 90% or more identical to SEQ ID NO: 1, an amino acid sequence that is about 90% or more homologous to SEQ ID NO: 1, or an antiviral fragment of any of the foregoing,

(ii) a variant of (i), which comprises (a) one or more conservative or neutral amino acid substitutions and/or (b) 1, 2 or 3 amino acid additions at the N-terminus and/or C-terminus, with the proviso that the variant has antiviral activity characteristic of the antiviral protein consisting essentially of the amino acid sequence of SEQ ID NO: 1 and isolated or purified from *Scytonema varium* to a greater or lesser extent but not negated,

(iii) a fusion protein of (i),

(iv) a fusion protein of (ii),

(v) a conjugate comprising (i) and at least one effector component,

(vi) a conjugate comprising (ii) and at least one effector component,

(vii) a composition comprising one or more of (i)-(vi),

(viii) an isolated or purified nucleic acid consisting essentially of a nucleotide sequence encoding the amino acid sequence of SEQ ID NO: 1, an amino acid sequence that is about 90% or more identical to SEQ ID NO: 1, an amino acid sequence that is about 90% or more homologous to SEQ ID NO: 1, or an antiviral fragment of any of the foregoing, optionally in the form of a vector,

(ix) a variant of (viii), which comprises nucleotides encoding (a) one or more conservative or neutral amino acid substitutions and/or (b) up to 1, 2 or 3 amino acid additions at the N-terminus and/or C-terminus, with the proviso that the encoded amino acid sequence has antiviral activity characteristic of the antiviral protein, which consists essentially of the amino acid sequence of SEQ ID NO: 1 and which is isolated or purified from *Scytonema varium*, optionally in the form of a vector,

(x) an isolated or purified nucleic acid consisting essentially of a nucleotide sequence encoding a fusion protein of (viii), optionally in the form of a vector,  
(xi) an isolated or purified nucleic acid consisting essentially of a nucleotide sequence encoding a fusion protein of (ix), optionally in the form of a vector,  
(xii) a composition comprising one or more of (viii)-(xi), and  
(xiii) an isolated cell comprising (viii), (ix), (x), or (xi),  
which method optionally further comprises the prior, simultaneous or subsequent administration, by the same route or a different route, of an antiviral agent or another agent that is efficacious in inhibiting the viral infection,  
whereupon the viral infection is inhibited.

38. The method of claim 37, wherein the viral infection is caused by a virus having a glycoprotein comprising a high-mannose oligosaccharide as a coat protein.

39. The method of claim 38, wherein the virus is an immunodeficiency virus.

40. The method of claim 37, wherein the host is a human and the immunodeficiency virus is human immunodeficiency virus (HIV).

41. The method of any of claims 37-40, wherein the fusion protein comprises albumin.

42. The method of any of claims 37-40, wherein the at least one effector component can be the same or different and is selected from the group consisting of polyethylene glycol, dextran, a toxin, an immunological reagent, an antiviral agent, and a solid support matrix.

43. The method of any of claims 37-40, wherein the isolated cell is a cell from the host, which had been previously isolated and contacted with (viii), (ix), (x) or (xi).

44. The method of any of claims 37-40, wherein the isolated cell is a cell from a homologous host.

45. The method of any of claims 37-40, wherein the isolated cell is a nonpathogenic bacterium or a yeast.

46. The method of claim 45, wherein the nonpathogenic bacterium is a *Lactobacillus*.

47. A method of inhibiting a virus in a biological sample or in/on an inanimate object, which method comprises contacting the biological sample or the inanimate object with a viral-inhibiting amount of at least one of the following:

(i) an isolated or purified antiviral protein consisting essentially of the amino acid sequence of SEQ ID NO: 1, an amino acid sequence that is about 90% or more identical to SEQ ID NO: 1, an amino acid sequence that is about 90% or more homologous to SEQ ID NO: 1, or an antiviral fragment of any of the foregoing,

(ii) a variant of (i), which comprises (a) one or more conservative or neutral amino acid substitutions and/or (b) 1, 2 or 3 amino acid additions at the N-terminus and/or C-terminus, with the proviso that the variant has antiviral activity characteristic of the antiviral protein, which consists essentially of the amino acid sequence of SEQ ID NO: 1 and which is isolated or purified from *Scytonema varium*, to a greater or lesser extent but not negated,

(iii) a fusion protein of (i),

(iv) a fusion protein of (ii),

(v) a conjugate comprising (i) and at least one effector component,

(vi) a conjugate comprising (ii) and at least one effector component, and

(vii) a composition comprising one or more of (i)-(vi),

which method optionally further comprises the prior, simultaneous or subsequent contacting, in the same manner or in a different manner, of the biological sample or inanimate object with an antiviral agent or another agent that is efficacious in inhibiting the virus,

whereupon the virus is inhibited.

48. The method of claim 47, wherein the biological sample is blood, a blood product, cells, a tissue, an organ, sperm, a vaccine formulation, or a bodily fluid.

49. The method of claim 47, wherein the inanimate object is a solution, a medical supply, or a medical equipment.

50. The method of any of claims 47-49, wherein the fusion protein comprises albumin.

51. The method of any of claims 47-49, wherein the at least one effector component can be the same or different and is selected from the group consisting of polyethylene glycol, dextran, a toxin, an immunological reagent, an antiviral agent, and a solid support matrix.

52. An antibody that binds to a scytovirin.

53. The antibody of claim 52, wherein the scytovirin consists essentially of SEQ ID NO: 1 and the antibody binds to an epitope of SEQ ID NO: 1.

54. The antibody of claim 53, wherein the scytovirin has been purified or isolated from *Scytonema varium*.

55. A composition comprising the antibody of any of claims 52-54.

56. An anti-scytovirin antibody.

57. The anti-scytovirin antibody of claim 56, which has an internal image of gp120 of an immunodeficiency virus.

58. A composition comprising the anti-scytovirin antibody of claim 56 or 57.

59. The composition of claim 58, which further comprises an immunostimulant.

60. A method of inhibiting infection of a mammal with a virus, which method comprises:

administering to the mammal an anti-scytovirin antibody, or a composition comprising same, in an amount sufficient to induce in the mammal an immune response to the virus,

which method optionally further comprises the prior, simultaneous or subsequent administration, by the same or a different route, of an antiviral agent or another agent that is efficacious in inducing an immune response to the virus,

whereupon the infection of the mammal with the virus is inhibited.

61. The method of claim 60, wherein the anti-scytovirin antibody has an internal image of gp120 of an immunodeficiency virus with which the mammal can be infected.

62. The method of claim 60 or 61, which further comprises the administration of an immunostimulant.